

IN THE CLAIMS

Please amend the claims as follows:

Claim 1. (Currently Amended) A block copolymer mixture comprising a branched block copolymer as the main component, said block copolymer mixture comprises from 65 to 75 mass% of a vinyl aromatic hydrocarbon and from 25 to 35 mass% of a conjugated diene as monomer units, a linear block copolymer prior to coupling is formed by coupling living active site represented by the following formulae:

S1-B-Li

S2-B-Li

S3-B-Li_n

[[O]] wherein each of S1, S2 and S3 is a polymer block consisting of a vinyl aromatic hydrocarbon as monomer units, B is a polymer block consisting of a conjugated diene as monomer units, and Li is a living active site comprising lithium, and the number average molecular weights are $S1 > S2 > S3$ [[]]], and further, (1) molecular weight distribution (M_w/M_n) of a mixture of the polymer blocks S1, S2 and S3 each comprising a vinyl aromatic hydrocarbon as monomer units is within a range of from 3.25 3.25 to 6, and (2) in a gel permeation chromatogram of the mixture of the polymer blocks S1, S2 and S3, $M1/M3$ is within a range of from 13 to 25, and $M2/M3$ is within a range of from 2 to 4, where M1, M2 and M3 are peak top molecular weights of components corresponding to S1, S2 and S3, respectively, and

wherein all monomer units are charged as pure monomers and each charge is completely polymerized before the addition of the subsequent charge.

Claim 2. (Original) The block copolymer mixture according to Claim 1, which comprises the branched block copolymer in an amount of from 65 to 90 mass%.

Claim 3. (Previously Presented) The block copolymer mixture according to Claim 1, wherein the proportion of the number of moles of S1 to the total number of moles of S1, S2 and S3 is within a range of from 2 to 30 mol%.

Claim 4. (Currently Amended) A block copolymer mixture comprising a branched block copolymer as the main component, said block copolymer mixture comprises from 65 to 75 mass% of a vinyl aromatic hydrocarbon and from 25 to 35 mass% of a conjugated diene as monomer units, a linear block copolymer prior to coupling is formed by coupling living active site represented by the following formulae:

S1-B-Li

S2-B-Li

S3-B-Li,

wherein each of S1, S2 and S3 is a polymer block consisting of a vinyl aromatic hydrocarbon as monomer units, B is a polymer block consisting of a conjugated diene as monomer units, and Li is a living active site comprising lithium, and the number average molecular weights are $S1 > S2 > S3$, and further, (1) molecular weight distribution (M_w/M_n) of a mixture of the polymer blocks S1, S2 and S3 each comprising a vinyl aromatic hydrocarbon as monomer units is within a range of from 3.25 to 6, and (2) in a gel permeation chromatogram of the mixture of the polymer blocks S1, S2 and S3, $M1/M3$ is within a range of from 13 to 25, and $M2/M3$ is within a range of from 2 to 4, where $M1$, $M2$ and $M3$ are peak top molecular weights of components corresponding to S1, S2 and S3, respectively,

wherein all monomer units are charged as pure monomers and each charge is completely polymerized before the addition of the subsequent charge, and

~~The block copolymer mixture according to Claim 1,~~ wherein in the gel permeation chromatogram of the mixture of the polymer blocks S1, S2 and S3, the peak top molecular weight M1 corresponding to S1 is within a range of from 80,000 to 220,000, the peak top molecular weight M2 corresponding to S2 is within a range of from 14,000 to 25,000, and the peak top molecular weight M3 corresponding to S3 is within a range of from 3,000 to 12,000.

Claim 5. (Previously Presented) The block copolymer mixture according to Claim 1, wherein in the gel permeation chromatogram of the block copolymer mixture comprising a branched block copolymer, the molecular weight distribution (M_w/M_n) of the peak at which the peak top molecular weight becomes minimum among peaks which satisfy the following (a) and (b), is less than 1.03:

(a) the peak top molecular weight is within a range of from 20,000 to 50,000, and

(b) the proportion of the area is within a range of from 3 to 15% to the whole peak area.

Claim 6. (Previously Presented) The block copolymer mixture according Claim 1, wherein in the gel permeation chromatogram of the block copolymer mixture containing a branched block copolymer, the proportion of the area of the peak at which the peak top molecular weight becomes maximum among peaks at which the peak top molecular weight is within a range of from 200,000 to 380,000, is from 2 to 10% to the whole peak area.

Claim 7. (Previously Presented) The block copolymer mixture according to Claim 1, wherein in the gel permeation chromatogram of a mixture of copolymers S1-B, S2-B and S3-B, each comprising the polymer block comprising the vinyl aromatic hydrocarbon as monomer units and the polymer block comprising the conjugated diene as monomer units,

M4/M6 is within a range of from 4.5 to 9, and M5/M6 is within a range of from 1.3 to 1.8, where M4, M5 and M6 are peak top molecular weights of components corresponding to S1-B, S2-B and S3-B, respectively.

Claim 8. (Previously Presented) The block copolymer mixture according to Claim 1, wherein a component providing the maximum peak area in the gel permeation chromatogram of the block copolymer mixture comprising the branched block copolymer, has a peak top molecular weight of from 170,000 to 300,000.

Claim 9. (Previously Presented) The block copolymer mixture according to Claim 1, which is formed by coupling using an epoxidized oil.

Claim 10. (Original) The block copolymer mixture according to Claim 9, wherein the epoxidized oil is epoxidized soybean oil.

Claim 11. (Previously Presented) The block copolymer mixture according to Claim 9, wherein the proportion of the number of moles of an open epoxy group residue present in an epoxidized oil residue in the branched block copolymer is less than 0.7 to the total number of moles of epoxy groups and the open epoxy group residue present in the epoxidized oil residue.

Claim 12. (Previously Presented) A thermoplastic resin composition comprising the block copolymer mixture as defined in Claim 1 and a thermoplastic resin other than the block copolymer mixture.

Claim 13. (Original) The thermoplastic resin composition according to Claim 12, wherein the thermoplastic resin is a styrene resin.

Claim 14. (Currently Amended) A block copolymer mixture comprising a branched block copolymer as the main component, said block copolymer mixture comprises from 65 to 75 mass% of a vinyl aromatic hydrocarbon and from 25 to 35 mass% of a conjugated diene as monomer units, a linear block copolymer prior to coupling is formed by coupling living active site represented by the following formulae:

S1-B-Li

S2-B-Li

S3-B-Li_x

[[O]] wherein each of S1, S2 and S3 is a polymer block consisting of a vinyl aromatic hydrocarbon as monomer units, B is a polymer block consisting of a conjugated diene as monomer units, and Li is a living active site comprising lithium, and the number average molecular weights are $S1 > S2 > S3$ [[O]], and further, (1) molecular weight distribution (Mw/Mn) of a mixture of the polymer blocks S1, S2 and S3 each comprising a vinyl aromatic hydrocarbon as monomer units is within a range of from ~~3.25~~ 3.25 to 6, and (2) in a gel permeation chromatogram of the mixture of the polymer blocks S1, S2 and S3, M1/M3 is within a range of from 13 to 25, and M2/M3 is within a range of from 2 to 4, where M1, M2 and M3 are peak top molecular weights of components corresponding to S1, S2 and S3, respectively,

wherein each polymer block S1, S2, and S3 consisting of the vinyl aromatic hydrocarbon as monomer units is directly attached to the conjugated diene polymer block B; the polymer blocks S1, S2, and S3 do not contain the conjugated diene polymer block B; and

the conjugated diene polymer block B does not contain the polymer blocks S1, S2, and S3 consisting of the vinyl aromatic hydrocarbon as monomer units.

Claim 15. (Previously Presented) The block copolymer mixture according to Claim 14, which comprises the branched block copolymer in an amount of from 65 to 90 mass%.

Claim 16. (Previously Presented) The block copolymer mixture according to Claim 14, wherein the proportion of the number of moles of S1 to the total number of moles of S1, S2 and S3 is within a range of from 2 to 30 mol%.

Claim 17. (Previously Presented) A block copolymer mixture comprising a branched block copolymer as the main component, said block copolymer mixture comprises from 65 to 75 mass% of a vinyl aromatic hydrocarbon and from 25 to 35 mass% of a conjugated diene as monomer units, a linear block copolymer prior to coupling is formed by coupling living active site represented by the following formulae:

S1-B-Li

S2-B-Li

S3-B-Li,

wherein each of S1, S2 and S3 is a polymer block consisting of a vinyl aromatic hydrocarbon as monomer units, B is a polymer block consisting of a conjugated diene as monomer units, and Li is a living active site comprising lithium, and the number average molecular weights are $S1 > S2 > S3$, and further, (1) molecular weight distribution (M_w/M_n) of a mixture of the polymer blocks S1, S2 and S3 each comprising a vinyl aromatic hydrocarbon as monomer units is within a range of from 3.25 to 6, and (2) in a gel permeation chromatogram of the mixture of the polymer blocks S1, S2 and S3, $M1/M3$ is within a range

of from 13 to 25, and M2/M3 is within a range of from 2 to 4, where M1, M2 and M3 are peak top molecular weights of components corresponding to S1, S2 and S3, respectively,

wherein each polymer block S1, S2, and S3 consisting of the vinyl aromatic hydrocarbon as monomer units is directly attached to the conjugated diene polymer block B; the polymer blocks S1, S2, and S3 do not contain the conjugated diene polymer block B; and the conjugated diene polymer block B does not contain the polymer blocks S1, S2, and S3 consisting of the vinyl aromatic hydrocarbon as monomer units, and

~~The block copolymer mixture according to Claim 14,~~ wherein in the gel permeation chromatogram of the mixture of the polymer blocks S1, S2 and S3, the peak top molecular weight M1 corresponding to S1 is within a range of from 80,000 to 220,000, the peak top molecular weight M2 corresponding to S2 is within a range of from 14,000 to 25,000, and the peak top molecular weight M3 corresponding to S3 is within a range of from 3,000 to 12,000.

Claim 18. (Previously Presented) The block copolymer mixture according to Claim 14, wherein in a the gel permeation chromatogram of the block copolymer mixture comprising a branched block copolymer, the molecular weight distribution (M_w/M_n) of the peak at which the peak top molecular weight becomes minimum among peaks which satisfy the following (a) and (b), is less than 1.03:

(a) the peak top molecular weight is within a range of from 20,000 to 50,000, and

(b) the proportion of the area is within a range of from 3 to 15% to the whole peak area.

Claim 19. (Previously Presented) The block copolymer mixture according Claim 14, wherein in a the gel permeation chromatogram of the block copolymer mixture containing a branched block copolymer, the proportion of the area of the peak at which the peak top

molecular weight becomes maximum among peaks at which the peak top molecular weight is within a range of from 200,000 to 380,000, is from 2 to 10% to the whole peak area.

Claim 20. (Previously Presented) The block copolymer mixture according to Claim 14, wherein in a the gel permeation chromatogram of a mixture of copolymers S1-B, S2-B and S3-B, each comprising a the polymer block comprising a the vinyl aromatic hydrocarbon as monomer units and a the polymer block comprising a the conjugated diene as monomer units, M_4/M_6 is within a range of from 4.5 to 9, and M_5/M_6 is within a range of from 1.3 to 1.8, where M_4 , M_5 and M_6 are peak top molecular weights of components corresponding to S1-B, S2-B and S3-B, respectively.

Claim 21. (Previously Presented) The block copolymer mixture according to Claim 14, wherein a component providing the maximum peak area in the gel permeation chromatogram of the block copolymer mixture comprising the branched block copolymer, has a peak top molecular weight of from 170,000 to 300,000.

Claim 22. (Previously Presented) The block copolymer mixture according to Claim 14, which is formed by coupling using an epoxidized oil.

Claim 23. (Previously Presented) The block copolymer mixture according to Claim 22, wherein the epoxidized oil is epoxidized soybean oil.

Claim 24. (Previously Presented) The block copolymer mixture according to Claim 22, wherein the proportion of the number of moles of an open epoxy group residue present in an epoxidized oil residue in the branched block copolymer is less than 0.7 to the total number

of moles of epoxy groups and the open epoxy group residue present in the epoxidized oil residue.

Claim 25. (Previously Presented) A thermoplastic resin composition comprising the block copolymer mixture as defined in Claim 14 and a thermoplastic resin other than the block copolymer mixture.

Claim 26. (Previously Presented) The thermoplastic resin composition according to Claim 25, wherein the thermoplastic resin is a styrene resin.

Claim 27. (Previously Presented) The block copolymer mixture according to Claim 1, wherein said linear blocks S1-B-Li, S2-B-Li, and S3-B-Li are obtained by charging the vinyl aromatic hydrocarbon three times followed by charging the conjugated diene.

Claim 28. (Previously Presented) The block copolymer mixture according to Claim 14, wherein said linear blocks S1-B-Li, S2-B-Li, and S3-B-Li are obtained by charging the vinyl aromatic hydrocarbon three times followed by charging the conjugated diene.